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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HELEN BIDDISCOMBE,
Appellant

Appeal 2008-3305
Application 09/763,723[1]
Technology Center 1700

Decided: October 15, 2008

Before CAROL A. SPIEGEL, LINDA M. GAUDETTE, and MARK NAGUMO, *Administrative Patent Judges*.

SPIEGEL, *Administrative Patent Judge*.

DECISION ON APPEAL

I. Statement of the Case

This is an appeal under 35 U.S.C. § 134 from a final rejection of all pending claims, claims 2-5, 8, 9, 12, 13, 15-17, 20-27, and 29-31. We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM-IN-PART.

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[1] Application 09/763,723 ("the 723 application"), *Polymeric Films*, filed 27 February 2001, is the national stage filing under 35 U.S.C. § 371 of international application PCT/EP99/06272, filed 26 August 1999, which claims priority to United Kingdom application 9818560.6, filed 27 August 1998. The real party in interest is said to be Hoechst Trespaphan GmbH (Appeal Brief, filed 23 July 2007 ("App. Br."1)).

The subject matter on appeal is directed to an in-mold labeled, blow-molded article formed from high density polyethylene, wherein the label is formed from a biaxially oriented polypropylene based voided film having at least 4% shrinkage in both the machine and transverse directions. There are three independent claims on appeal, claims 13, 21, and 29. Claims 8 and 13 are illustrative and read (App. Br. 36 and 37):

> 13. An in-mold labeled, blow-molded article formed from high density polyethylene, the label being formed from a biaxially oriented polypropylene based voided film having a shrinkage of at least 4% in both the machine and transverse directions as measured by the OPMA shrink test, said film comprising a base layer composed of a polypropylene homopolymer and an outer layer, wherein said film has a density of 0.8 g/cm^3 or more and said outer layer comprises a heat sealable polymer and wherein a majority of said heat sealable polymer is formed from a copolymer selected from the group consisting of ethylene and propylene or ethylene, propylene and butane-1.
>
> 8. An article according to claim 13, wherein the base layer contains a hydrogenated hydrocarbon resin.

Claim 21 requires the film to have a density of 0.8 g/cm^3 or less, while claim 29 is silent regarding the density of the film (App. Br. 38 and 39).

The Examiner has rejected claims 2-5, 9, 13, 15-17, 21-25, and 29-31 as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Balaji[2] and Yamanaka[3] (Ans.[4] 3-5); and, claims 8, 12, 20, 26, and 27 as

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[2] U.S. Patent 6,726,969 B1, *In-Mold Labels and Uses Thereof*, issued 27 April 2004, issued to Balaji et al., based on application 08/789,292, filed 28 January 1997 ("Balaji").
[3] U.S. Patent 5,332,542, *Process for Producing Labeled Hollow Container*, issued 26 July 1994, to Yamanaka et al. ("Yamanaka").

unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Balaji, Yamanaka, and Takagaki[5] (Ans. 5-6).

At issue is whether the combined disclosures of Balaji, Yamanaka, and/or Takagaki teach or suggest all the elements of independent claims 13, 21, and 29; whether Takagaki teaches or suggests a base layer containing a hydrogenated hydrocarbon as recited in dependent claims 8, 12, 20, 26, and 27; and, whether Takagaki is analogous prior art to Balaji and Yamanaka.

II. Findings of Fact ("FF")

The following findings of fact, and those set forth in the Discussion, are supported by a preponderance of the evidence of record.

A. The 723 Application

[1] According to the 723 specification ("Spec."), "[t]he in-mold labelling of articles, in which a label is incorporated into the surface of an article made from a polymeric material as the article is formed, is a well known technique" (Spec. 1).

[2] "Typically films used for the in-mold labelling of polyolefinic parisons are also made from polyolefins, polypropylene based films being widely proposed as being suitable for use in labelling articles made by blow molding either polypropylene or polyethylene parisons" (Spec. 2).

[3] "For example, if conventionally produced films consisting of either a solid or voided polypropylene homopolymer core layer with two outer layers of a heat sealable propylene ethylene copolymer are used as in-

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[4] Examiner's Answer mailed 26 September 2007 ("Ans.").
[5] U.S. Patent 5,078,817, *Process for Producing Printed Container for Food Packaging*, issued 7 January 1992, to Takagaki ("Takagaki").

mold labels for articles produced from polypropylene homopolymer parisons, satisfactory adhesion of the label to the article can, in general, be readily achieved" (Spec. 2-3).

[4] "However, if the same film is used for the blow in-mold labelling of high density polyethylene articles, blistering and/or 'orange peel' effects are obtained" (Spec. 3).

[5] According to the 723 specification (Spec. 4),

> both blistering and "orange peel" effects can be avoided [in the blow in-mold labelling of high density polyethylene articles] by the use of films having shrinkages of greater than 4% as measured by the OPMA shrink test in both the machine and transverse directions. Furthermore, this surprising effect is observed both with polyolefin homopolymer based films having densities of not more than 0.69g/cm^3, that is voided films, where "orange peel" effects have been a problem with films with shrinkages of less than 4%, and with films with densities of 0.8g/cm^3 or more, where blister formation tends to occur with prior art films.

B. Balaji

[6] According to Balaji, in-mold labeling involves sequentially deploying polymeric labels comprising a heat-activable adhesive on the molding surface of the blow mold to be bonded onto successive hot plastic substrates or containers (Balaji 1:31-38) with reduced blistering (Balaji 1:5-7).

[7] The blow molded parisons are expanded against the molding surface and the in-mold label, activating the adhesive and bonding the label to the blown plastic substrate or container (Balaji 1:38-42).

[8] After which the whole assembly is cooled to room temperature as rapidly as possible (Balaji 2:57-59).

[9] Balaji discloses plastic substrates bonded to an in-mold label comprising a core (base) layer with a first and second surface and a heat seal layer on the first surface of the core layer, wherein the heat seal layer comprises a polyolefin (Balaji 3:20-31).

[10] The plastic substrate may be a polypropylene or polyethylene terephthalate container (Balaji 5:66-6:2).

[11] The label may be produced as a coextruded film which is stretched in one or two directions (Balaji 3:45-51).

[12] The Balaji labels "provide shrinkages of less than about 6%, to less than about 5%. Typically, the shrink rate is about 3-4%" (Balaji 4:11-14).

[13] The label's core layer may comprise a polyolefin such as a homo or copolymer of polypropylene (Balaji 7:16-21).

[14] Suitable polypropylene copolymers include 6D20 random copolymer polypropylene sold by Union Carbide Corporation (Balaji 7:34-37).

[15] The 6D20 random copolymer polypropylene has a density of 0.890 g/cm^3 (Balaji 7:34-44).

[16] The core layer may be voided to increase stiffness, increase opacity, and/or decrease material usage (Balaji 8:15-17).

[17] Voided films can be produced by biaxial or, preferably, uniaxial orientation of an incompatible two phase system (Balaji 8:38-44).

[18] Typical void initiating materials useful in incompatible two phase systems can be organic or inorganic (Balaji 9:39-43).

[19] Examples of organic void initiating particles include polyamides, nylons, high density polyethylene, and polypropylene homopolymer (Balaji 9:44-47).

[20] Examples of inorganic void initiating particles include titanium dioxide, mica, clay, and chalk (Balaji 9:47-53).

[21] One embodiment of a core layer, as shown in Example 3 of Table 2, is 85% 6D20 random copolymer polypropylene, 5% ethylene vinyl acetate, and 10% titanium dioxide concentrate (Balaji 14:27).

[22] In this context, titanium dioxide concentrate is a 50:50 blend by weight of titanium dioxide and polypropylene homopolymer (Balaji 7:46-48).

[23] The heat seal layer, in one embodiment, may contain from about 60% up to about 90% by weight polyolefin (Balaji 4:44-47).

[24] The polyolefin in the heat seal layer maybe a homo- or co-polymer, preferably derived of ethylene, propylene, or butylene (Balaji 4:53-60).

C. Yamanaka

[25] Yamanaka discloses a "shortened" process for producing an in-mold labeled, blow molded article using a multilayered label comprising a heat seal layer containing a mixture of at least two thermoplastic resins having different melting points (Yamanaka 2:17-28).

[26] The label also comprises a base layer, which in a particularly preferred embodiment,

> . . . is a stretched laminate film having microvoids composed of a biaxially stretched polypropylene film containing from 5 to 35% by weight of an inorganic fine powder having on one or both sides thereof a paper-like layer comprising a uniaxially stretched polypropylene film containing from 8 to 65% by weight of an inorganic powder. . . . With the void falling within a range of from 10 to 50%, the base layer of this type has an advantage of allowing use of the same polypropylene as used for the base layer as a resin for the parison because the

microvoids serve for heat insulation and thereby prevent the label from undergoing heat shrinkage during blow molding (Yamanaka 3:8-27).

[27] "Examples of inorganic fine powders and fillers include calcium carbonate, talc, clay, titanium oxide, silica, mica, zinc white, satin white, and so one" (Yamanaka 3:58-60).

[28] According to Yamanaka,

> Where polypropylene or high-density polyethylene is used as a parison-forming resin C, it is preferable to use, as a heat-sealable resin mixture, a mixture comprising from 10 to 55% by weight of a linear low-density polyethylene having a density of from 0.88 to 0.94 g/cm^3 and a melt index (MI) of from 0.05 to 30 g/10 min and from 45 to 90% by weight of at least one resin selected from low-density polyethylene, an ethylene-methacrylic acid copolymer, an ethylene-acrylic acid copolymer, and an ethylene-vinyl acetate copolymer (Yamanaka 4:43-52).

D. Takagaki

[29] Takagaki discloses

a process for producing a printed container for food packaging, comprising:

> winding around the side of a container main body, . . . a label consisting of a transparent heat-shrinkable resin film having a cylindrical shape whose circumference is slightly larger than the circumference of said side and further having a print at the inner side, and then carrying out:
>
> a step of subjecting said heat-shrinkable resin film to heat shrinkage, and
>
> a step of melt-bonding a part of the heat-shrinkable resin film to the container main body (Takagaki 1:61-2:7).

[30] According to Takagaki, heat shrinkage of the film is often concentrated at a particular portion of the film, such as a joint portion,

thereby leading to partial deformation of the container (Takagaki 5:9-13).

[31] Takagaki discloses this deformation can be avoided by coating the outer side of the container or the inner side of the shrinkable film with a heat-sensitive adhesive, "for example, rosin, rosin derivative, pinene type resin, petroleum resin, low-molecular polyolefin, crystalline wax or the like" to enable complete adhesion of the film to the entire outer surface of the container main body "to thereby dissipate the shrinking power of the film uniformly on the entire outer surface of the container main body and prevent the deformation of the container" (Takagaki 5:13-28).

[32] According to Takagaki, the container may be formed of polyethylene, polypropylene, or the like (Takagaki 2:65-3:9).

III. Discussion

A. The Examiner's findings and conclusions

The Examiner found Balaji discloses an in-mold labeled, blow molded article as claimed but for disclosing the article is formed from high-density polyethylene (Ans. 3-5). Notably, the Examiner found that Balaji discloses a label comprising a biaxially oriented voided film of polypropylene (Ans. 3).

As to independent claim 13, the Examiner stated (Ans. 4),

> Depending on the amount of voids produced within the voided film, the film would obviously have a density of 0.8g/cm^3 or more since the density of the polypropylene is about 0.89g/cc before the voids are produced (col.7, l.35-42) and the polypropylene is mixed with filler having a greater density (col.7, l.45-65).

As to independent claim 21, the Examiner stated (Ans. 4),

> Depending on the amount of voids produced within the voided film, the film would obviously have a density of 0.8 g/cm^3 or more since the density of the polypropylene is about 0.89g/cc before the voids are produced (col.7, l.35-42) and the air filling the voids is much less than 0.8g/cm^3. Therefore, if the film were formed with large voids the density of the film would be less than 0.8 g/cm^3.

The Examiner found Yamanaka discloses in mold labelling of labels having a voided polypropylene core layer and a heat sealable layer to polypropylene as well as high density polyethylene containers (Ans. 5).

The Examiner concluded (Ans. 5)

> it would have been obvious . . . to select high density polyethylene as the material for forming the blow-molded container comprising the in-mold label taught by Balaji . . . depending on the intended end result of the container, since it is well known that polypropylene and high-density polyethylene containers are interchangeable and that the in-mold label having the structure of Balaji . . . is used on both types of containers, as taught by Yamanaka . . . .

As to dependent claims 8, 12, 20, 26, and 27, the Examiner found the combined teachings of Balaji and Yamanaka "fail to teach adding a hydrogenated hydrocarbon resin to the base and/or intermediate layers" (Ans. 6). The Examiner found Takagi teaches use of hydrogenated hydrocarbon resins in shrinkage label layers "to enable the shrinking power of the film to occur uniformly . . . (col.5, l.9-20)" (Ans. 6). Thus, the Examiner concluded it would have been obvious to add the hydrogenated hydrocarbon resins of Takagi to the base and intermediate layers of Balaji to prevent deformation of the label as taught by Takagi (Ans. 6).

B. Appellant's position

Appellant argues the Examiner's rejections are in error because Balaji, Yamanaka, and/or Takagaki fail to teach or suggest (1) a film having a shrinkage rate of at least 4% in both the machine and transverse directions, as required by claims 13, 21 and 29, (2) a film having a density of less than 0.8 g/cm^3, as required by claim 21, or (3) the majority of the heat sealable layer being formed from a copolymer, as required by claims 13 and 29 (App. Br. 35). Appellant further argues (4) Takagaki is non-analogous art to Balaji and Yamanaka and, therefore, (5) there is no reason to combine Balaji and Yamanaka with Takagaki (App. Br. 35). Appellant still further argues Takagaki fails to teach hydrogenated hydrocarbon resins (App. Br. 34).

C. Legal principles

A claimed invention is not patentable if it would have been obvious to a person having ordinary skill in the art. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966). Facts relevant to a determination of obviousness include (1) scope and content of the prior art, (2) any differences between the claimed invention and the prior art, (3) the level of ordinary skill in the art, and (4) relevant objective evidence of obviousness or nonobviousness. *KSR*, 127 S.Ct. at 1734; *Graham*, 383 U.S. at 17-18.

For prior art teachings to be analogous, a question of fact, they must either (1) involve the same field of endeavor or (2) reasonably pertain to the particular problem with which the inventor is concerned. *In re Clay*, 966 F.2d 656, 658-59 (Fed. Cir. 1992).

D. Analysis

1. Balaji discloses a label formed from a biaxially stretched film providing a shrinkage rate of at least 4% as recited in independent claims 13, 21, and 27.

Each independent claim on appeal recites an in-mold labeled, blow-molded article which requires, in relevant part, that the label be formed from a film having a shrinkage rate of at least 4% in both the machine and transverse directions. Balaji discloses an in-mold labeled, blow-molded article having a label formed from a film which is stretched in one or two directions and provides shrinkages including less than about 6%, to less than about 5% (FF 11 and 12). While Balaji may prefer a label formed from a uniaxially stretched film and/or providing a shrinkage rate of about 3 to 4%, it is evident from Balaji's disclosure (FF 11 and 12) that less preferred biaxially stretched films providing shrinkages in excess of 4%, e.g., about 5% to less than about 6%, can be used to form the label. Therefore, Appellant's argument to the contrary is not supported by credible evidence and is not persuasive of Examiner error. A prior art disclosure is not limited to its preferred embodiments or specific working examples. *In re Burckel*, 592 F.2d 1175, 1179 (CCPA 1979); *In re Mills*, 470 F.2d 649, 651 (CCPA 1972); *In re Chapman*, 357 F.2d 418, 424 (CCPA 1966).

2. Balaji does not disclose a label formed from a film having a density of less than 0.8 g/cm^3 as recited in independent claim 21.

As pointed out by Appellant (App. Br. 29),

> Balaji does not give a density for the complete film, however it does give densities for the heat seal layer as well as the core layer. Balaji teaches that the heat seal layer has a density from about 0.85 to about 0.95 . . . g/cm^3. These densities are well

> over 0.8 g/cm^3. Furthermore, Balaji teaches that the heat seal layer does not include voids (Col. 8, Lns 46-47).
>
> The only example of a density for the material used in the core layer is a propylene copolymer having a density of 0.890 g/cc (or g/cm^3) (Col. 7, Lns. 34-44). Balaji does state[] that the core layer may also include ethylene vinyl acetate copolymer with a density of 940 kg/m^3 (or 0.940 g/cm^3) (Col. 7, Lns. 56-66). Balaji also states that the core layer may include titanium dioxide in an amount from about 2% to 30% . . ., which would only increase the density of the core layer (Col. 7, Lns 45-5). Therefore, Balaji only teaches or suggests a core layer having a density of 0.85 g/cm^3 or greater.

The Examiner admits that "Balaji does teach that the polymer forming the voided film has a density greater than 0.8 g/cm^3," but opines "depending on the amount of voids formed in the film the density of the film would be less than 0.8 g/cm^3 since air filling the voids has a density much less than 0.8 g/cm^3" (Ans. 7).

Assuming *arguendo* that the density of the label film of Balaji was effectively determined by the density of its core layer only (see FF 9 where Balaji discloses the label to comprise a core layer and heat seal layer), the Examiner has not provided a factual basis sufficient to support his conclusion that a voided core layer (see FF 16 where Balaji discloses the core layer may be voided) would have a density much less than 0.8 g/cm^3. For example, the Examiner has not explained what effect the agents used to form voids in a voided core layer would have on the density of the voided core layer nor has the Examiner explained what amount of voiding would be required to obtain a density of less than 0.8 g/cm^3 and why the record shows that one of ordinary skill in the art would have provided that amount of voiding in the core layer of Balaji.

Furthermore, the Examiner's conclusion regarding the density of the voided core layer vis-à-vis claim 21 is inconsistent with his conclusion regarding the voided layer vis-à-vis claim 13. As to claim 13, the Examiner stated, "***Depending on the amount of voids*** produced within the voided film, the film would ***obviously*** have a density of 0.8 g/cm^3 or more since the density of the polypropylene is about 0.89g/cc before the voids are produced (col. 7, l.35-42) and the polypropylene is mixed with fillers having a greater density (col. 7, l.45-65)" (Ans. 4, emphasis added).

Here, we find the evidence advanced by Appellant outweighs the evidence advanced by the Examiner. We conclude that Balaji does not teach or suggest a label film having a density of less than 0.8 g/cm^3 as required by claim 21. Neither Yamanaka nor Takagi make up for this deficiency in Balaji. Therefore, we reverse the rejection of claim 21 and its dependent claims, claims 22-27, under § 103(a) over the combined teachings of Balaji and Yamanaka and/or Takagi.

3. Balaji reasonably teaches a label comprising a heat sealable layer formed from a majority of a copolymer selected from (a) ethylene and polypropylene or (b) ethylene, propylene, and butane-1, as recited in independent claims 13 and 29.

Balaji discloses a label comprising a heat seal layer (FF 9) which may, in one embodiment, contain from about 60% up to about 90% by weight polyolefin (FF 23), wherein the polyolefin may be a copolymer, preferably derived of ethylene, propylene, or butylene (FF 24). Therefore, Balaji reasonably teaches or suggests a label comprising a heat seal layer formed from a majority of a polyolefin copolymer, preferably derived from ethylene and polypropylene. Therefore, Appellant's argument to the contrary is not

supported by the preponderance of the evidence and is not persuasive of reversible Examiner error.

4. Takagaki is in the same field of endeavor as Balaji and Yamanaka.

Takagaki applies a heat shrinkable label to a container comprising polyethylene, polypropylene or the like (FF 29 and 32). Balaji applies a heat shrinkable label to a container formed from polypropylene or polyethylene terephthalate (FF 9 and 10). Yamanaka applies a heat shrinkable label to a container formed from polypropylene or high density polyethylene (FF 25, 26, and 28). Appellant argues Takagaki is nonanalogous art to Balaji and Yamanaka because the heat shrink label of Takagaki is applied to a preformed container, while the heat shrink label of Balaji and Yamanaka are applied in-mold to a blow molded container (App. Br. 34-35). However, as noted by the Examiner, Takagaki, Balaji, and Yamanaka are all concerned with heat shrink labels applied to the outside of containers (Ans. 9), i.e., all three references are involved in the same field of endeavor.

The Examiner acknowledges that some differences would exist between the labels because of the different labeling processes (Ans. 9). However, Appellant provides no factual basis or reasoning regarding why one of ordinary skill in the art would not look to heat shrink labels in general when making improvements to in-mold labels, particularly in-mold labels applied to containers made of similar materials, e.g., polypropylene. Attorney argument and conclusory statements, absent evidence, are entitled to little, if any, weight. *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

Therefore, this argument is not persuasive of reversible Examiner error.

5. The Examiner provided a reason to combine Takagaki with Balaji and Yamanaka.

"Obviousness is not to be determined on the basis of purpose alone." *In re Graf*, 343 F.2d 774, 777 (CCPA 1965). However, rejections based on obviousness cannot be sustained by mere conclusory statements. Rather, there must be some articulated reason with some rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Here, the Examiner has provided a reason for combining Takagaki with Balaji and Yamanaka which Appellant has not materially challenged, i.e., "to add the hydrogenated hydrocarbon resins of Takagi [sic] to the base layer and intermediate layer of Balaji . . . to prevent deformation of the label, as taught by Takagi [sic]" (Ans. 6). We note that each reference is concerned with minimizing distortion of the finished product (FF 6, 26, 31). The fact that the Examiner's reason may be directed to a deformation effect other than the blistering or orange peeling that concerns Appellant is insufficient to rebut the conclusion of obviousness presented by the Examiner. *KSR,* 127 S.Ct. at 1741; *In re Dillon*, 919 F.2d 688, 693-94 (Fed. Cir. 1990).

Therefore, this argument is not persuasive of reversible Examiner error.

6. Appellant has not demonstrated that the hydrogenated hydrocarbon resin recited in claims 8, 12, 20, 26, and 27

> are patentably different from the resins disclosed by Takagaki.

Dependent claims 8, 12, and 20 add a hydrogenated hydrocarbon resin to the various layers of the label film of independent claims 13 and 21.[6] None of claims 8, 12, or 20 require any particular level of hydrogenation or number of carbon residues. The Examiner found Takagaki discloses hydrogenated hydrocarbon resins at column 5, lines 9-20 (Ans. 6). Appellant has not pointed to where the 723 specification provides a limiting definition of "hydrogenated hydrocarbon resin" as recited in claims 8, 12, and 20 which excludes the resins, e.g., the petroleum resin, disclosed by Takagaki. Therefore, this argument is not persuasive of reversible Examiner error.

E. Summary

We sustain the rejections of claims 2-5, 8, 9, 12, 13, 15-17, and 29-31 under § 103(a), but reverse the rejections of claims 21-27 under § 103(a).

IV. Order

Upon consideration of the record, and for the reasons given, it is

ORDERED that the decision of the Examiner rejecting claims 2-5, 9, 13, 15-17, and 29-31 as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Balaji and Yamanaka is AFFIRMED;

FURTHER ORDERED that the decision of the Examiner rejecting claims 21-25 as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Balaji and Yamanaka is REVERSED;

[6] Claims 26 and 27 are patentable by virtue of their dependence on claim 21.

FURTHER ORDERED that the decision of the Examiner rejecting claims 8, 12, and 20 as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Balaji, Yamanaka, and Takagaki is AFFIRMED;

FURTHER ORDERED that the decision of the Examiner rejecting claims 26 and 27 as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Balaji, Yamanaka, and Takagaki is REVERSED; and,

FURTHER ORDERED that the no time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

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